United States Air Force

Air Force Aerial Targets
“Contributions to Transformation”

15-19 November 2004
NDIA Symposium & Exhibition
Charleston, South Carolina

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Eglin AFB, FL

Overall Classification of This Briefing is Unclassified

Overview

- Background
- Product Groups
  - Full-scale Aerial Targets
  - Subscale Aerial Targets
  - Target Support Systems
- The Way Ahead

Aerial Target Systems

AAC/YAA

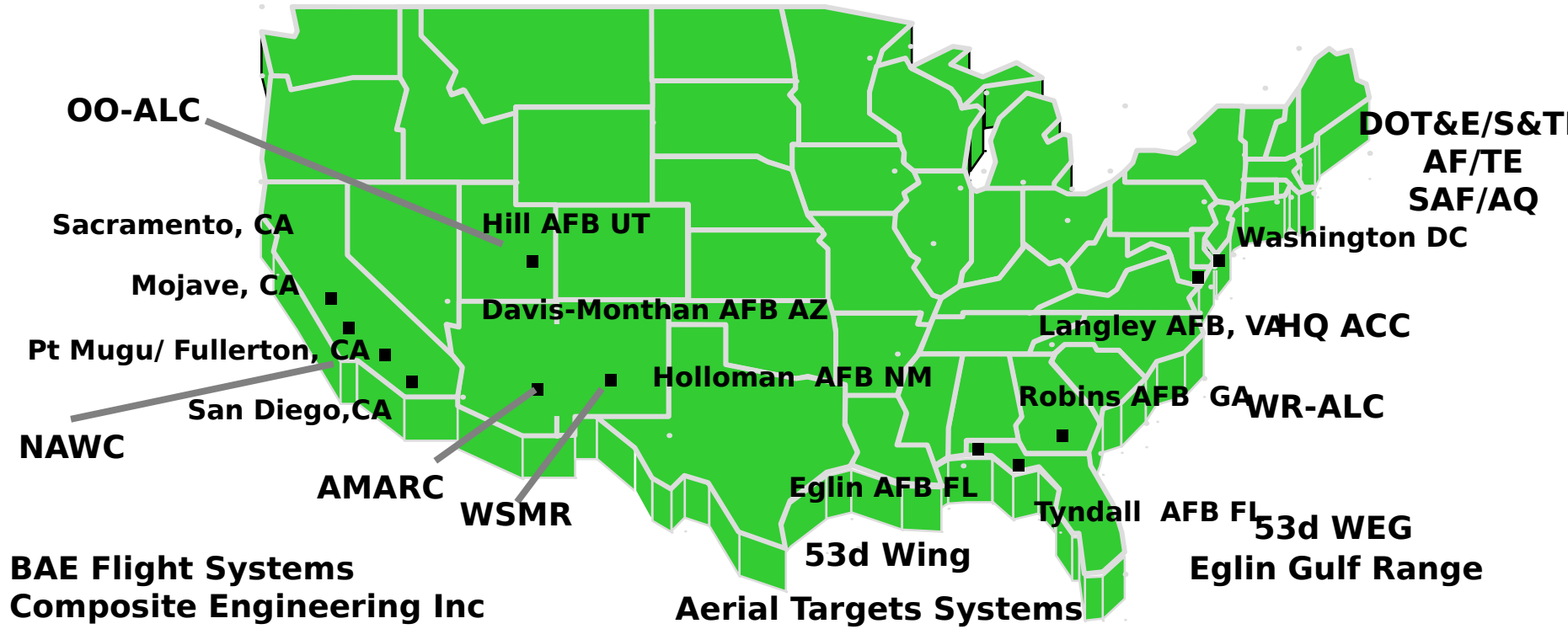
- **Airborne aircraft designed to replicate threat aircraft systems**
  - **Enemy fighter aircraft**
  - **Enemy cruise missiles**
- **Required per Public Law, Title 10, US Code 2366**
  - **New / improved weapon systems are required to demonstrate lethality prior to production**
  - **Also required for USAF air-to-air weapon system evaluation program (WSEP)**
- **Used to validate performance of DOD ground-air and air-air missile/aircraft systems**
  - **Must emulate performance, signatures, countermeasures (infrared and electronic attack)**

Background

- The entire Air Force Aerial Targets team provides
  - Realistic threat-representative aircraft “presentations”
    - The target itself
    - The ability to control the target in the air
    - Launch, recovery, maintenance, repair
- The Aerial Targets System Directorate
  - Develops, procures and sustains aerial targets and related systems

Aerial Targets Organizations

AAC/YAA

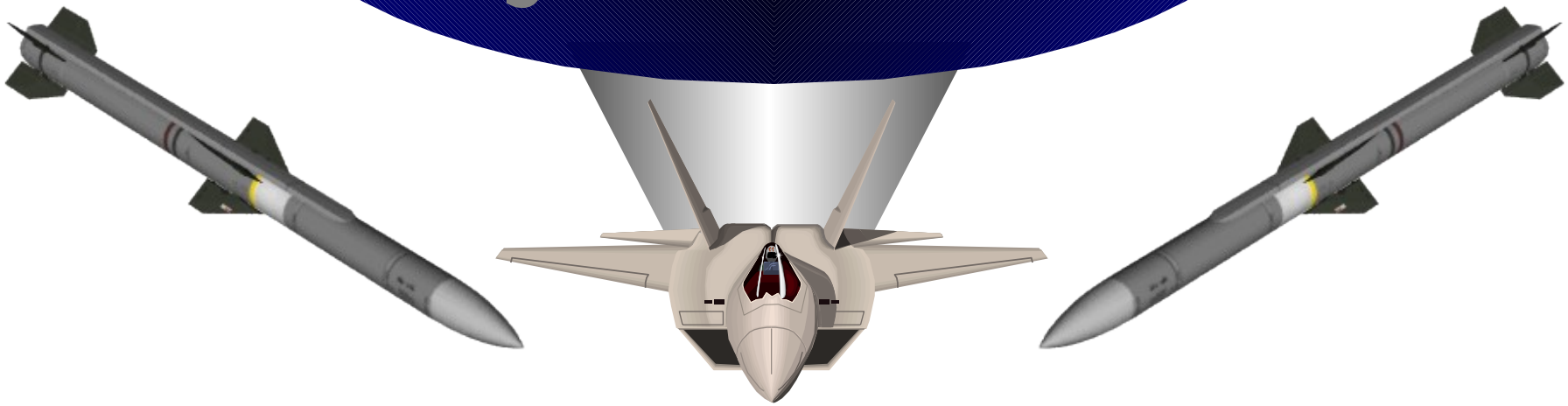


BAE Flight Systems
Composite Engineering Inc
Northrop Grumman Ryan Aero
Lockheed Martin
Cartwright Electronics
MicroSystems
Microturbo
QRC

Who Are Our Customers?

AAC/YAA

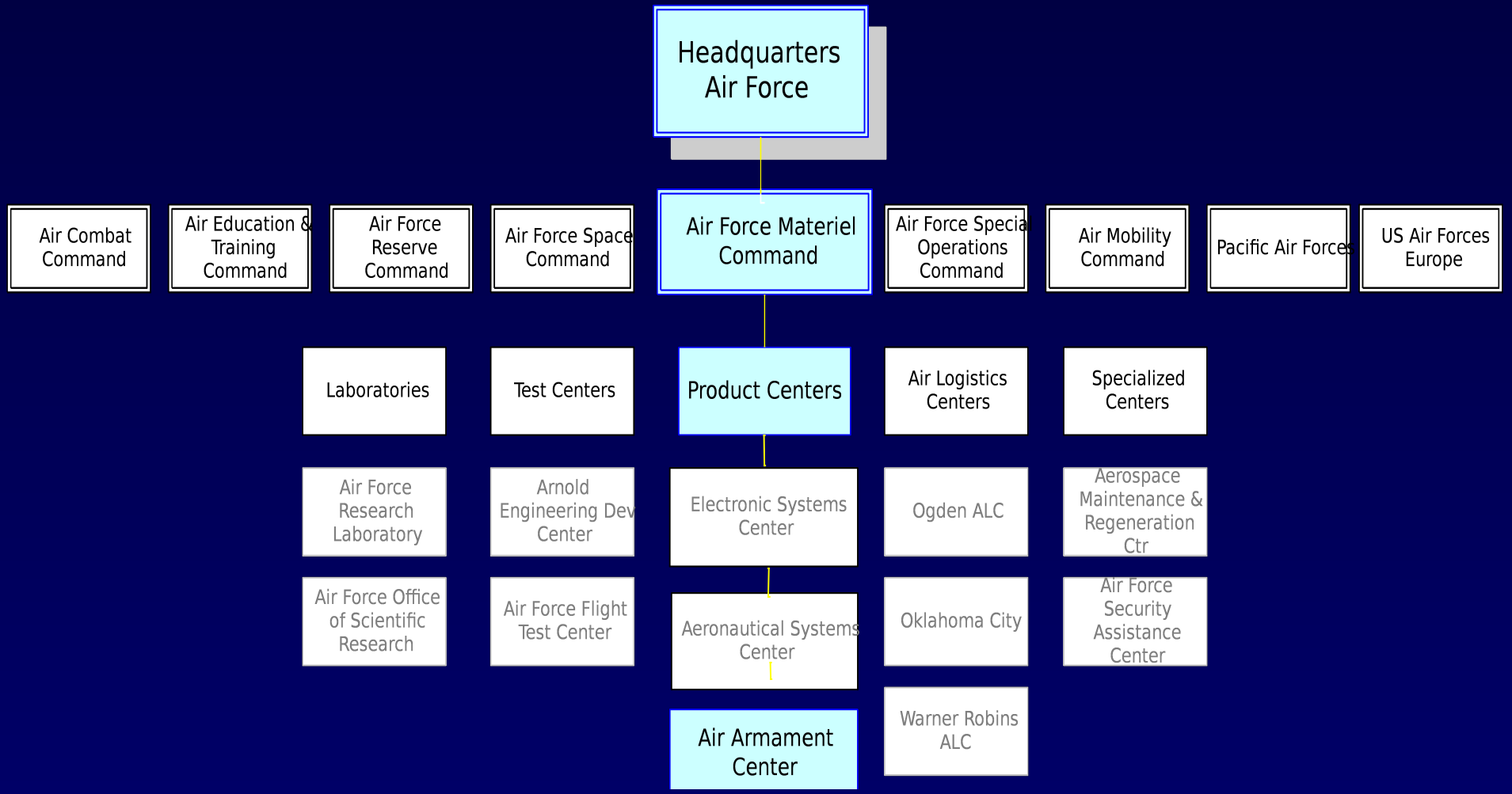
Missile Development Programs & Testers



SHOOTERS • OPERATORS • MAINTAINERS

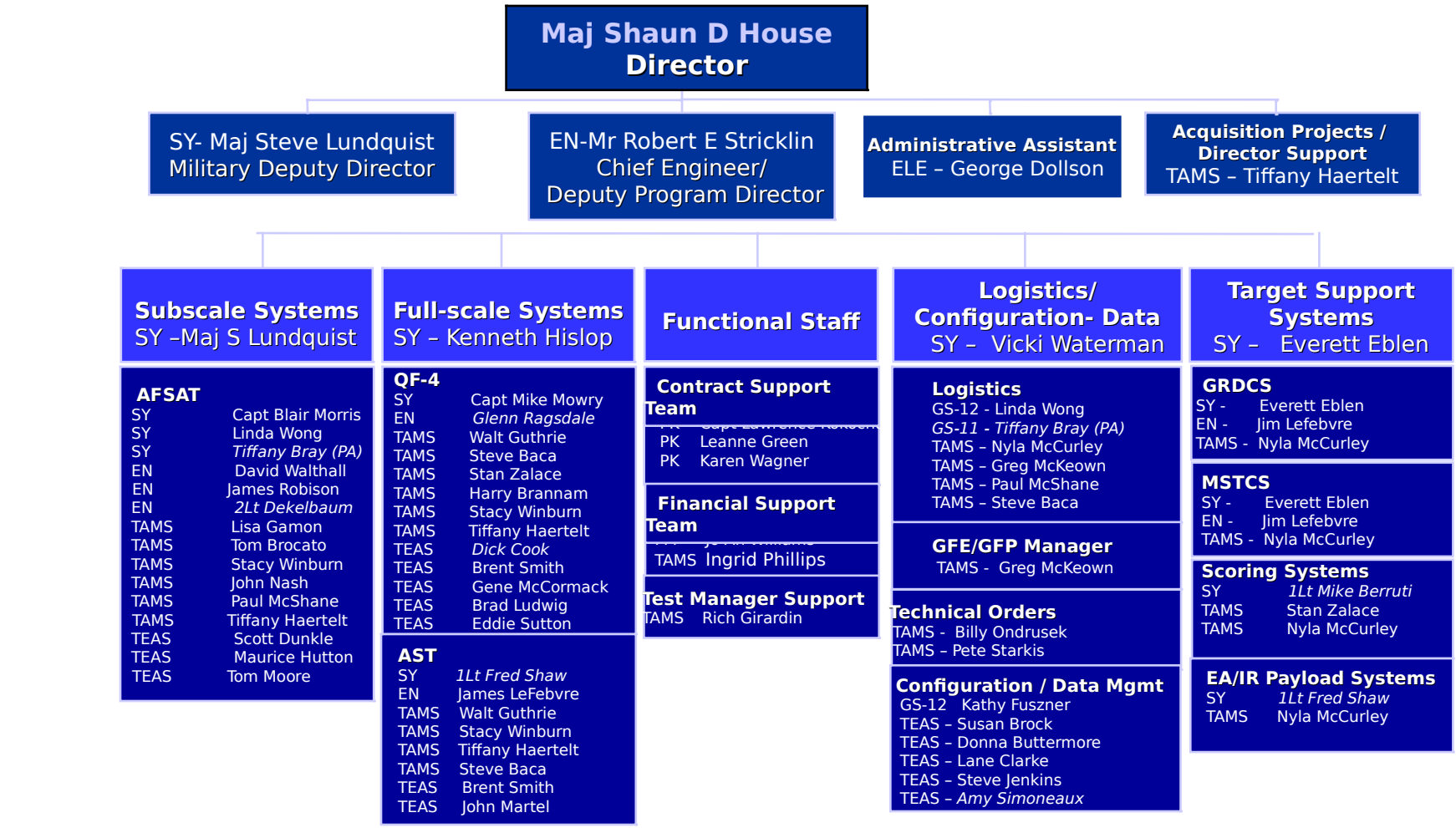
Where We Fit In

AAC/YAA



AAC/YAA Aerial Targets Systems

AAC/YAA



As of 1 Oct 04

Overview

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Full-scale Aerial Targets

QF-4 Full-Scale Aerial Target (FSAT)

AAC/YAA

Program Manager: Capt Mike Mowry
Systems Engineer: Mr. Glenn Ragsdale

QF-4 Full-Scales

AAC/YAA

Key Features

- Safe Operation Provided By:
  - Automatic Flight Control System in Primary and Backup Modes
  - Ground Control and Relay Via Line-of-Sight Up-link or Relay Through Airborne Tracking Instrumentation System Aircraft
    - Eglin Gulf Range and WSMR
  - Reliable/Effective Flight Termination System (Automatic and Manual Fail-safe Fast Destruct, Orbit Destruct, and Destruct Receiver Capability)

Key Enabler for Multiple Strategies

- Assures warfighters that weapon systems perform
  adequately against threat-representative targets
  -- Satisfies public law Title 10 “Live Fire/Lethality”
  developmental/operational test requirements
  -- Validates operational missile/weapon system
  effectiveness, fighter OFP updates, etc.
  -- Supersonic, high G, heavy payload

Program Schedule

Lot 7 Option (12)AF	
Lot 8 Option (12)AF	
Lot 9 Option (24)13* AF/6 FMS/5 Navy	Apr 03
Follow-on contract (16)12 AF/4 Navy	Apr 04
Lot 11	Dec 04

*Includes 4 FMS pay backs

QF-4 FSAT Program Schedule

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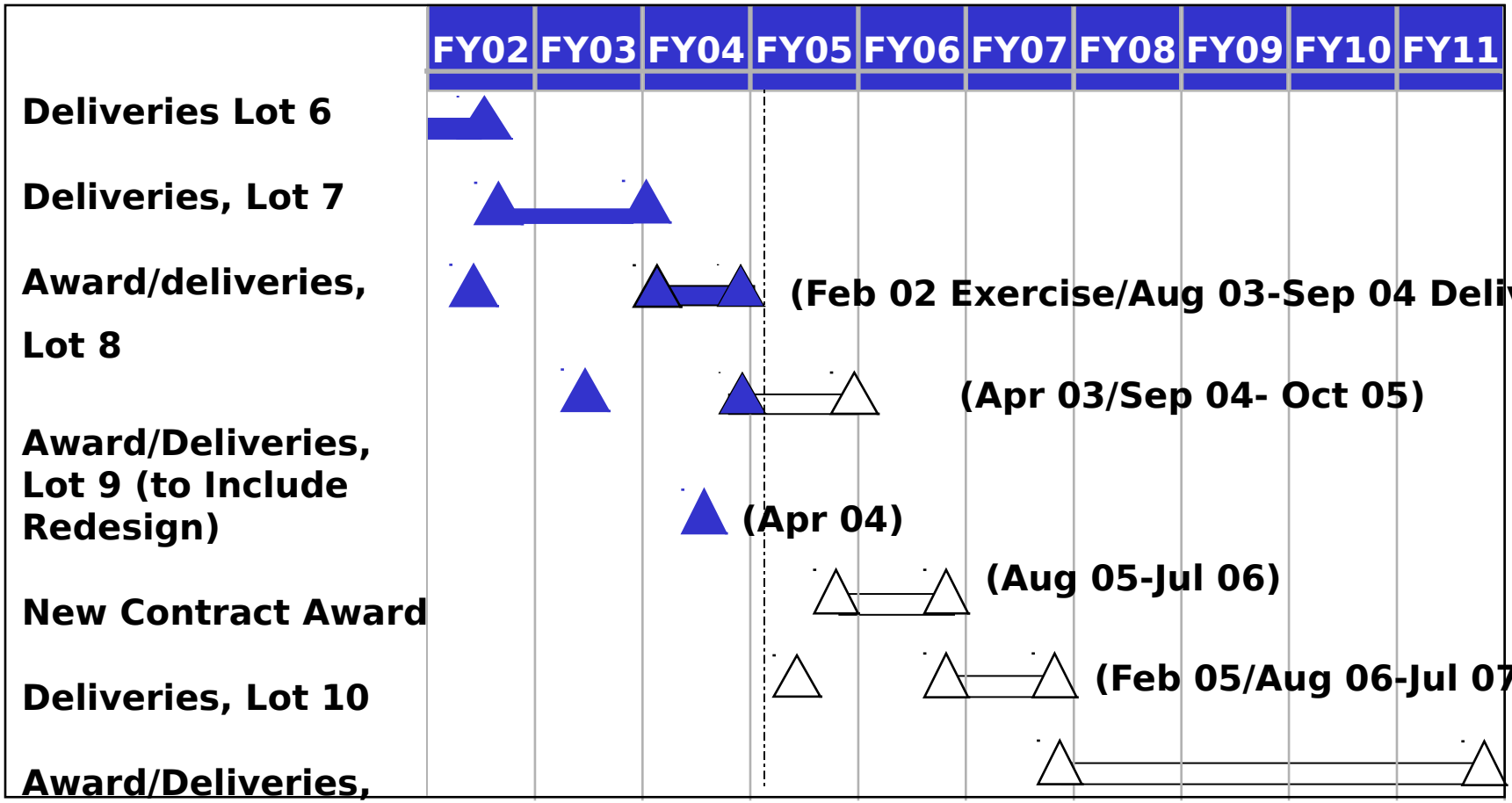

QF-4 Concern Areas

- **Near-term operational inventory shortfalls**
  - **Good News:**
    - **Aggressive management of kill authorizations by AF/TE has helped alleviate shortfall**
  - **Bad News:**
    - **Has come at expense of subscale inventory**
- **Availability of F-4 airframes long term**
- **Engineering support for 30+ year old aircraft no longer in inventory**

AF/Navy Predicted EOY Inventory

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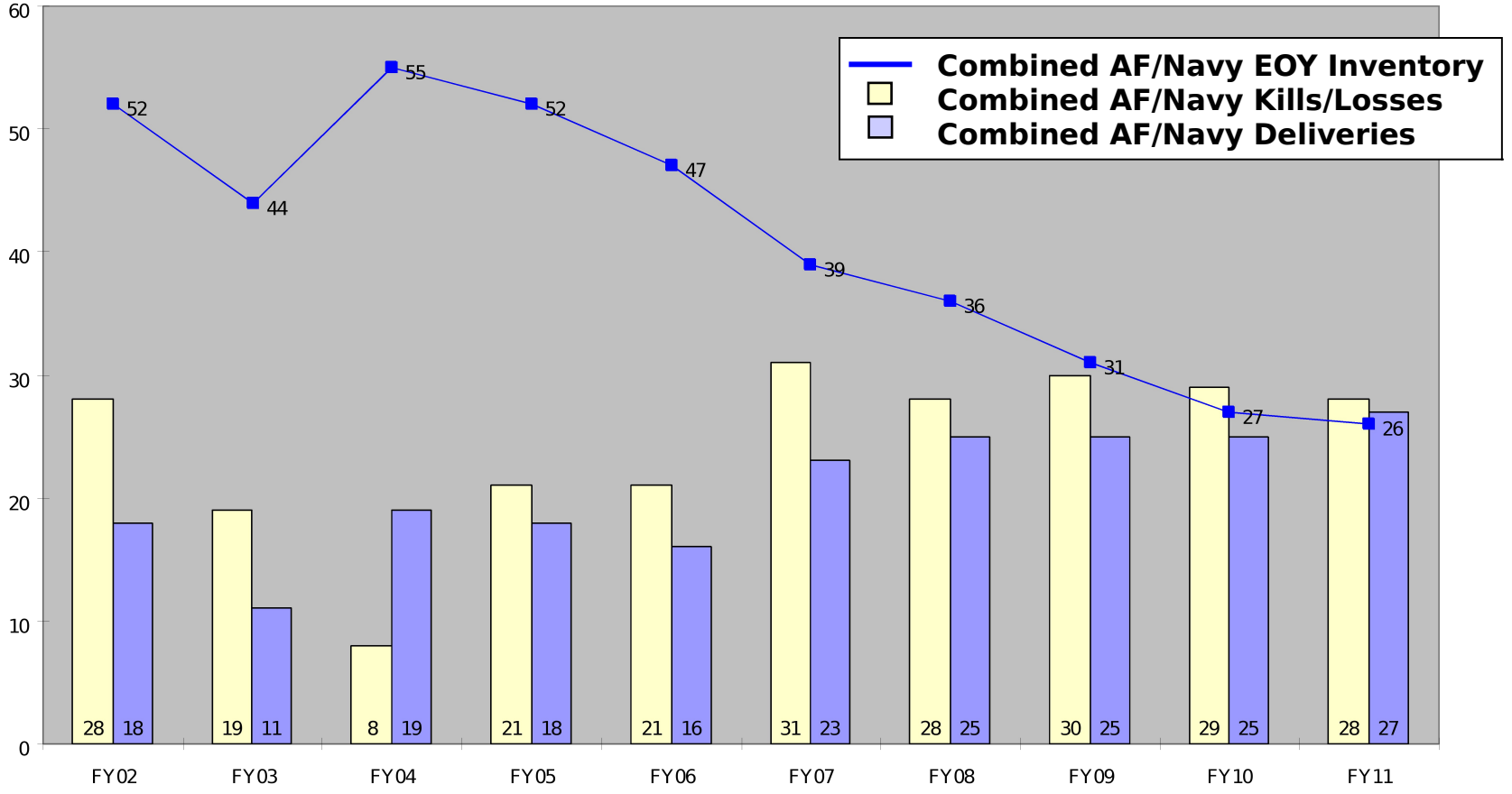

Supporting Other Service's Requirements

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- **Navy (and allies') requirements will accelerate depletion of F-4 inventory from AMARC**

- **Impact: We require follow-on FSAT (AST)**

Air Superiority Target (AST)

AAC/YAA

Capability Description

KPP	Threshold	Objective
- Airspeed/15kft		
-Minimum	250KCAS	200 KCAS
-Maximum	1.7M	1.85M
- Formation Flight	2,3,4 Targets	

- Payload Carriage	2,500lbs	5000lbs
- Flight Termination	Auto/Manual	

- Interoperability	Satisfy all critical IERS	

System Information

- Assures warfighters that weapon systems perform adequately against threat-representative targets
  -- Satisfies Public law Title 10 “Live Fire/Lethality” developmental/operational test requirements
  -- Validates operational missile/weapon system effectiveness, fighter OFP updates, etc.
  -- Supersonic, high-G, heavy-payload

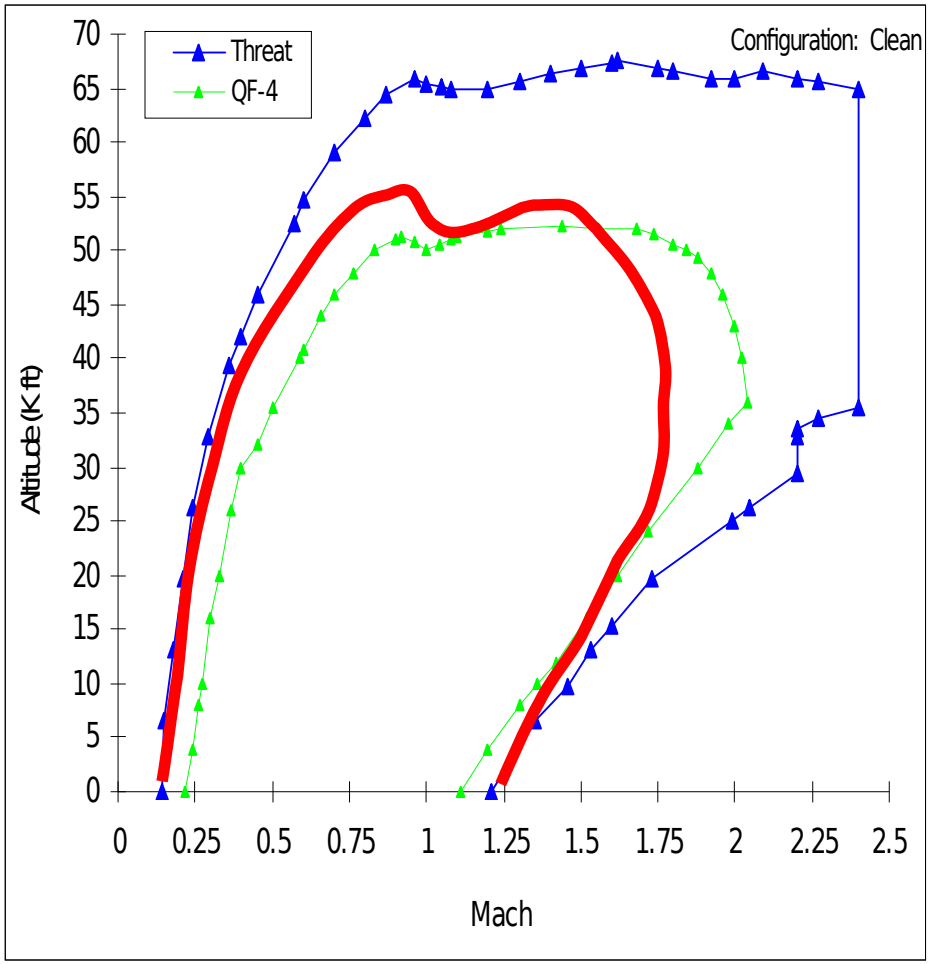
Schedule (TBD)

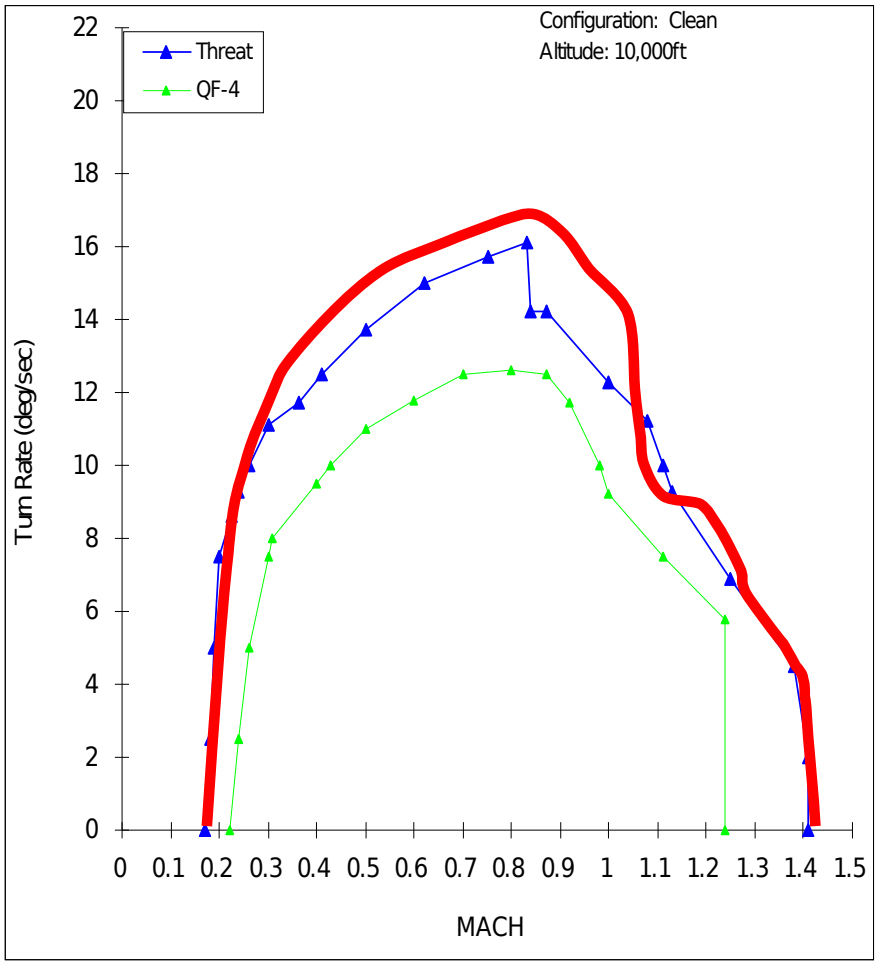
- Program Start FY07
- Contract Award FY08
- Production Decision FY13
- 1st Delivery FY15
- IOC FY16

Target Performance Profiles

AAC/YAA

Red Line Indicates QF-16 Performance





Full-scale Aerial Target Planning Summary

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3 Year QF-4 Life Extension with NWDS/Remaining RF-4C

QF-4 E/G/RF/NWDS

AST Contract Award FY08

FY05 FY06 FY07 FY08 FY09 FY10 FY11 FY12 FY13 FY14 FY15 FY16 FY17 FY18 FY19 FY20 FY21

Begin AST Study

Contract Award

Prod Decision

1st Del

Requirement Definition/ Contract Prep

Development (SDD)

Production

Operation

Phase Out/In

Milestone

Program Events

Mission Transfer

As of: 12 Oct 04

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Subscale Aerial Targets

BQM-164A

BQM-167A (AFSAT)

Program Manager: Capt Blair Morris
Lead Engineer: David Walthall

Key Performance Parameters

	Threshold/Objective
Payload Weight (lbs)	
Total	300/500
Internal	100/350
Endurance/Mission Time (Min)	
Total	60/75
Mil Power	30 of 60 @ 15k ft/45 of 75 @ 500 f
Airspeed	
Minimum	250KCAS/200KCAS
Maximum	0.90M/1.5M
Formation Flights	2, 3, and 4 targets

Description

- Assures warfighters that weapon systems perform
  adequately against threat-representative targets
  -- Satisfies Public law Title 10 “Live Fire/Lethality”
  developmental/operational test requirements
  -- Validates operational missile/weapon system effectiveness, fighter OFP updates, etc.
  -- Subsonic, relatively heavy-payload capability
- Meets USAF, Army, Navy, allies’ test requirements

Accomplishments/Milestones

	(APB Threshold)
Contract Award	12 Jul 02
LRIP Award (Qty 10)	Jul 04
Flight Demo/FDE	Nov 04 – Jul 05
Early Engine Buy	Dec 04
Full-Rate Production Award	Mar 05
Initial LRIP Delivery	Aug 05
First Article Testing	Aug – Dec 05
RAA	Jul 06-

BQM-167A Schedule

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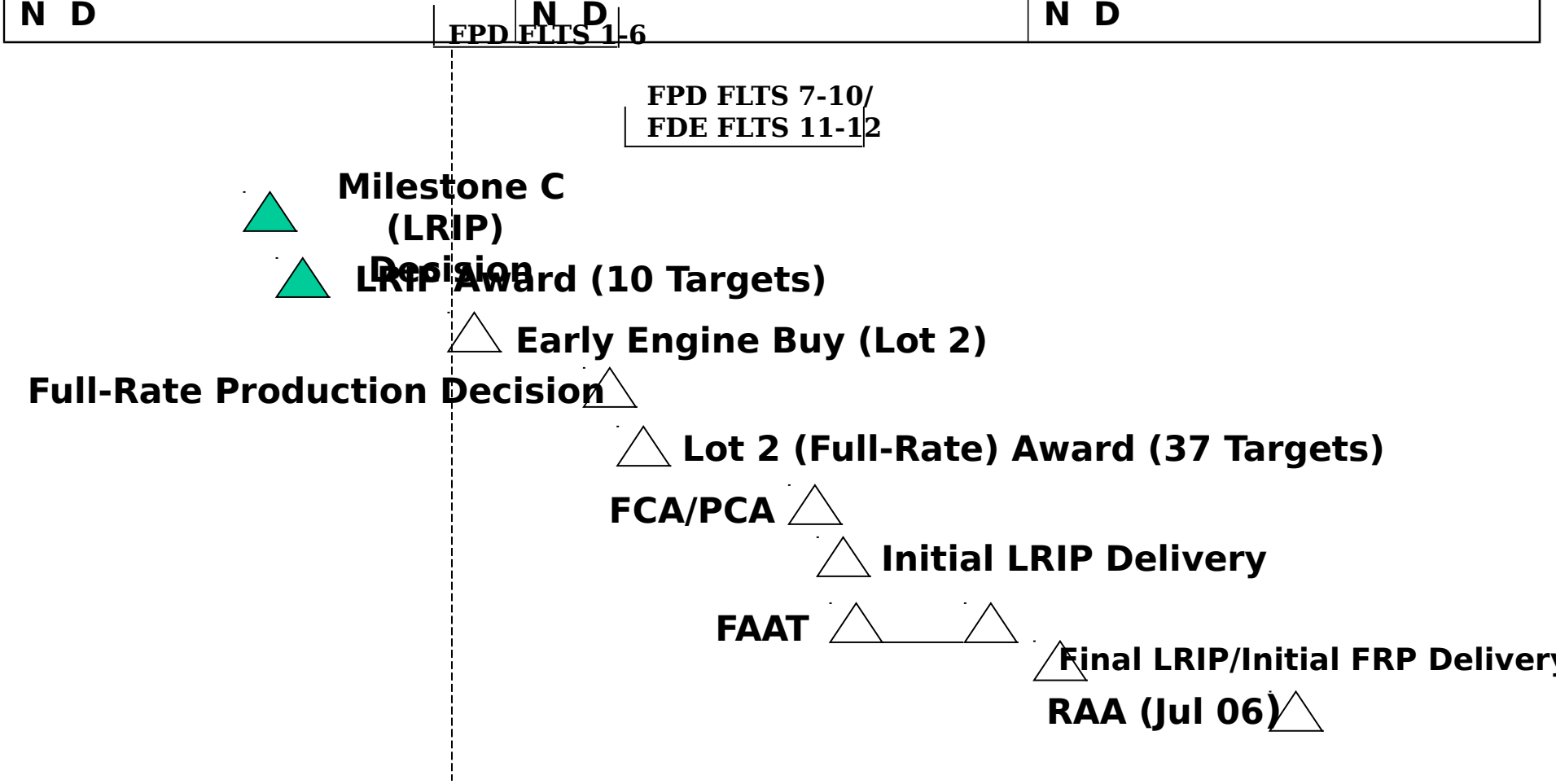
2004	2005	2006
J F M A M J J A S O N D	J F M A M J J A S O N D	J F M A M J J A S O N D



AFSAT Concern Area

- **Full-scale kill authorization process has shifted burden to subscales**
  - **Existing subscale inventories to be exhausted late 2006**
  - **AFSAT deliveries begin late 2005 – must stay on schedule**

Subscale Inventory Levels

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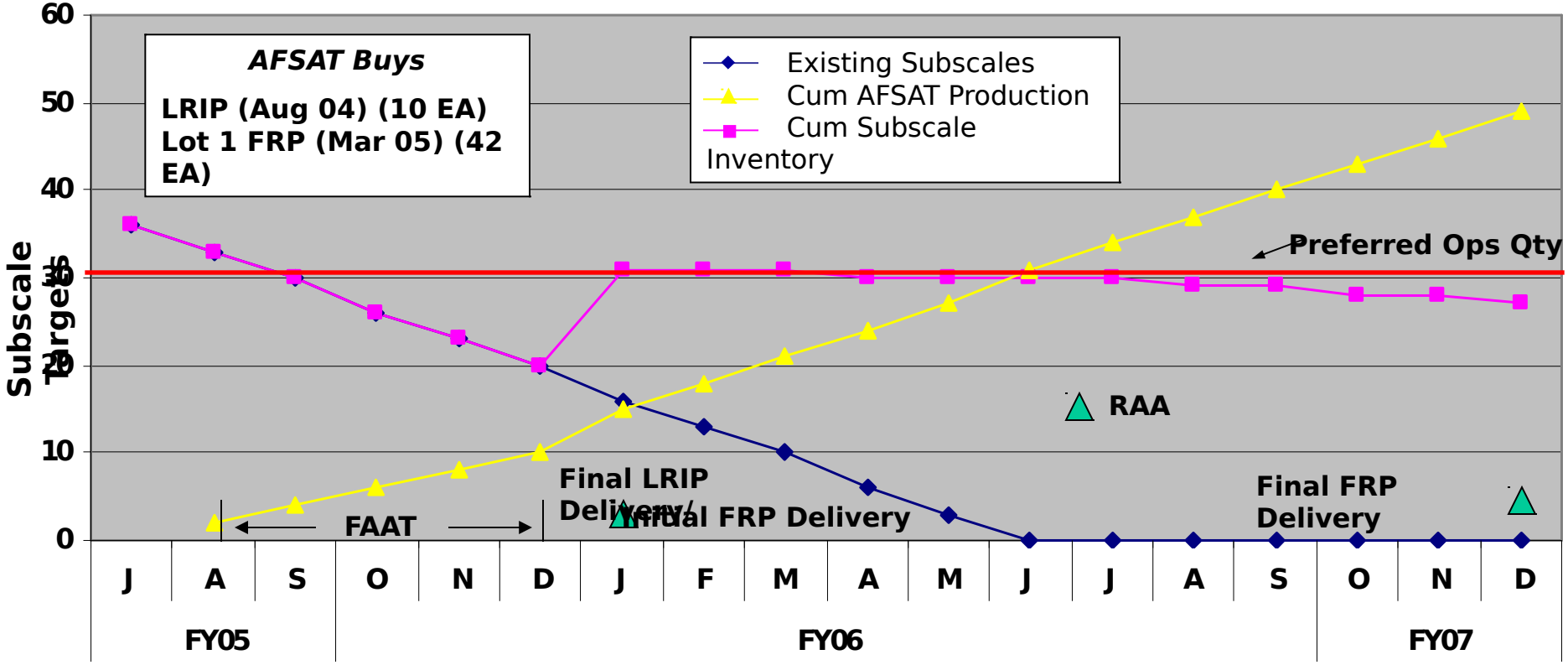

- Assumes USAF kill rate of 40/yr and all FMS/Navy/Army assets killed in year delivered

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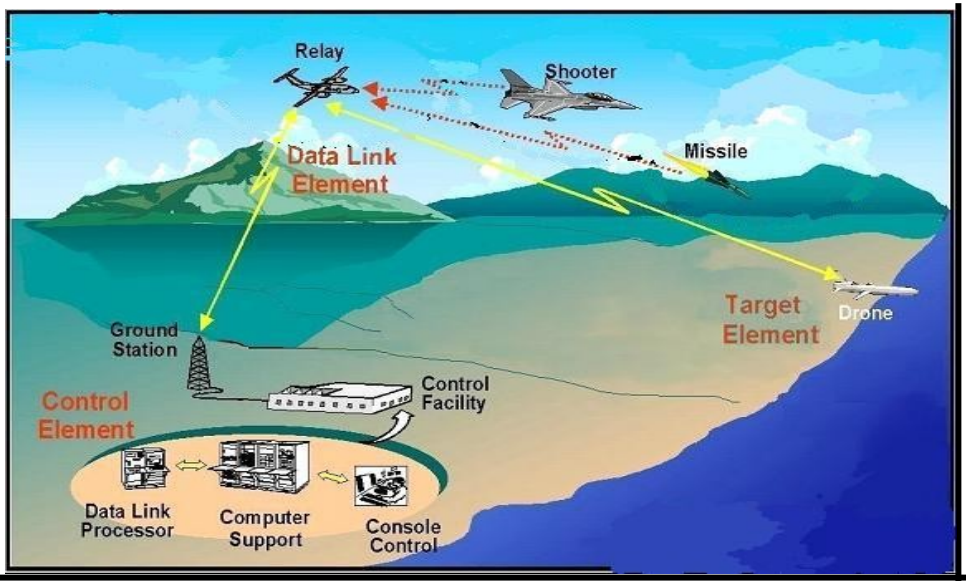
Gulf Range Drone Control System (GRDCS)

AAC/YAA



Key Features

- Able to track:
  - and control 4 drones (any mix)
  - 4 shooter aircraft via GRDCS II pods
  - 4 missiles (AMRAAM) via WRTTM
  - 4 high fliers (MU-2s for OTH)
  - 2 other aircraft (E-9 – AP/TM)
  - Missile termination (4 via WRTTM)
  - Target termination (4 QF-4s)
- Over-the-Horizon (OTH) operations
- 8 consoles (Tyndall), 14 ground stations, 15 trackir
  2 Mobile control systems, 1 development system (

- Program Manager: Everett Eblen
- Lead Engineer: Jim Lefebvre

Program Schedule

- IOC - 1985
- Sustainment – FY13
- Implementation of Advanced Target Control (ATCS)
  - Leverages Multi-Service Target Control System (MSTCS) and other CTEIP developed systems
- ATCS RAA – FY12

Concern Areas

- Operates on commercial frequency bandwidth (915 MHz)
- No GPS
- No encryption
- Parts Obsolescence
- Future upgrades/replacement

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AF Targets Future

- Continue monitoring full-scale inventory
- Increase yearly full-scale procurement
- Push for AST contract award in FY08
- Aggressively monitor/manage subscale inventories
- Must keep AFSAT on track